

**IN THE CLAIMS:**

1. A graphite archery arrow having an elongate shaft, a fletching portion at a first end of the shaft, and a tip portion at a second end of the shaft, the shaft comprising:

- (a) a plurality of graphite fibers longitudinally oriented along the shaft;
- (b) a plurality of graphite fibers biased to the longitudinally oriented graphite fibers;
- (c) a binder holding together the longitudinally oriented graphite fibers and the biased graphite fibers; and
- (d) the shaft further comprising a parallel portion adjacent the second end and a tapered portion between the parallel portion and the first end, the diameter of the tapered portion gradually and continuously decreasing from the parallel portion and further comprising a second parallel portion at the first end forming the fletching portion.

2. The graphite archery arrow of claim 1, wherein the biased graphite fibers are substantially normal to the longitudinally oriented graphite fibers.

3. The graphite archery arrow of claim 1, wherein the longitudinally oriented graphite fibers have a fiber area weight of about  $120\text{g/m}^2$ .

4. The graphite archery arrow of claim 3, wherein the biased graphite fibers have a fiber area weight of about  $70\text{ g/m}^2$ .

5. The graphite archery arrow of claim 1, wherein the binder is a thermoplastic epoxy resin.

6. The graphite archery arrow of claim 1, further comprising four layers of longitudinally oriented graphite fibers and two layers of biased graphite fibers.

7. The graphite archery arrow of claim 1, wherein the parallel portion is about 40% of the shaft length, the tapered portion is about 40% of the shaft length, and the second parallel portion is about 10% of the shaft length.

8. The graphite archery arrow of claim 7, wherein the parallel portion is 39% of the shaft length, the tapered portion is 53% of the shaft length, and the second parallel portion is 8% of the shaft length.

9. A graphite archery arrow having an elongate shaft, a fletching portion at a first end of the shaft, and a tip portion at a second end of the shaft, the shaft comprising a parallel portion adjacent the second end and a tapered portion between the parallel portion and the first end, the diameter of the tapered portion gradually and continuously decreasing from the parallel portion and further comprising a second parallel portion at the first end forming the fletching portion.

10. The graphite archery arrow of claim 9, wherein the parallel portion is about 40% of the shaft length, the tapered portion is about 50% of the shaft length, and the second parallel portion is about 10% of the shaft length.